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Published in:
7th International CDIO Conference 2011

Publication date:
2011

Document Version
Publisher's PDF, also known as Version of record

[Link back to DTU Orbit](#)

Citation (APA):
Christensen, J. E., Karhu, M., & Christensen, C. (2011). Teaching interpersonal skills in an international design-build course. In *7th International CDIO Conference 2011* (pp. 65) <http://www.cdio2011.dtu.dk/>

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TEACHING INTERPERSONAL SKILLS IN AN INTERNATIONAL DESIGN-BUILD COURSE

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ABSTRACT

The Technical University of Denmark (DTU) and Helsinki Metropolia University of Applied Sciences (Metropolia) started the CDIO concept in the autumn of 2008. The aim with this was to reform the B.Sc. courses to guide students to become better and more efficient engineers. The working conditions of a typical engineer involve many other fields than just those requiring technical skills. Interpersonal skills are becoming increasingly important, including communication, teamwork and leadership. The purpose of this paper is to describe the co-operation between DTU and Metropolia on the development of an International Communication Course for the engineering students and to emphasize the importance of including a course like this into the CDIO concept, to be worked on in the process of further development. The course described in this paper is a strictly non-engineering course in communication; it is special in that its chief purpose is to bring into focus the fact that students have to take an active part in the exercises as well as involve themselves in the interactive communication process. This is in stark contrast to a teacher giving lectures about communication, leaving the students passive listeners. The personal involvement aroused a negative reaction from several students at the beginning of the course however, during the one- week course the students gained a better understanding of the importance of learning how to communicate appropriately. Altogether, the four key questions dealing with the quality of the course show a very high satisfaction with the instruction. The grades one and two (1 best/very much, 5 worst/very little) of the responses to these four questions are ranging on average from 69.5% to 88% (on a yearly basis). The positive responses indicate that the students are very satisfied with the course recognising the need for education on international communication.

KEYWORDS

Active involvement, communication, exercise, interpersonal skills, optimal teaching, personal development.

INTRODUCTION

It is very important, when giving high quality teaching at university level, to present the lessons in varying ways with different kinds of teaching activities [1] [2] [3] [4]. For this reason the teacher needs to have a wide repertoire of teaching methods and study forms for different occasions [5]. These can be used by the teacher depending on content, context and objectives, and the students can apply the most suitable method at any given time.

One way to meet this challenge and create a greater variation is the implementation of the CDIO concept. This was introduced in the autumn of 2008 at the Technical University of Denmark (DTU) [6] and Helsinki Metropolia University of Applied Sciences (Metropolia). The main goal set for starting the CDIO concept was to work on the process of reforming the B.Sc. courses with the purpose of training students to become better and more efficient engineers. The CDIO Syllabus consists of four parts [7]: 1) Technical Knowledge and Reasoning, 2) Personal and Professional Skills and Attributes, 3) Interpersonal Skills: Teamwork and Communication, 4) Conceiving, Designing, Implementing and Operating Systems in the Entrepreneurial and Societal Context.

Figure 1 shows that the working conditions of the typical engineer will nowadays include many other competencies than just the hardcore technical skills – sections 2.1, 2.2 and 2.3. It will also include personal and professional skills, multidisciplinary teamwork, communication, communication in a foreign language and leadership – sections 2.4, 2.5, 3.1, 3.2 and 3.3. For this reason it is important that modern education for engineering students meets the demands of today's business life, where the engineer has to solve both technical and humanistic problems, thus creating good results from an all- round perspective. For this reason it is important to pursue interpersonal skills in engineering education – there, however, is a tendency in engineering educational systems to give the implementation of this pursuit a lower priority.

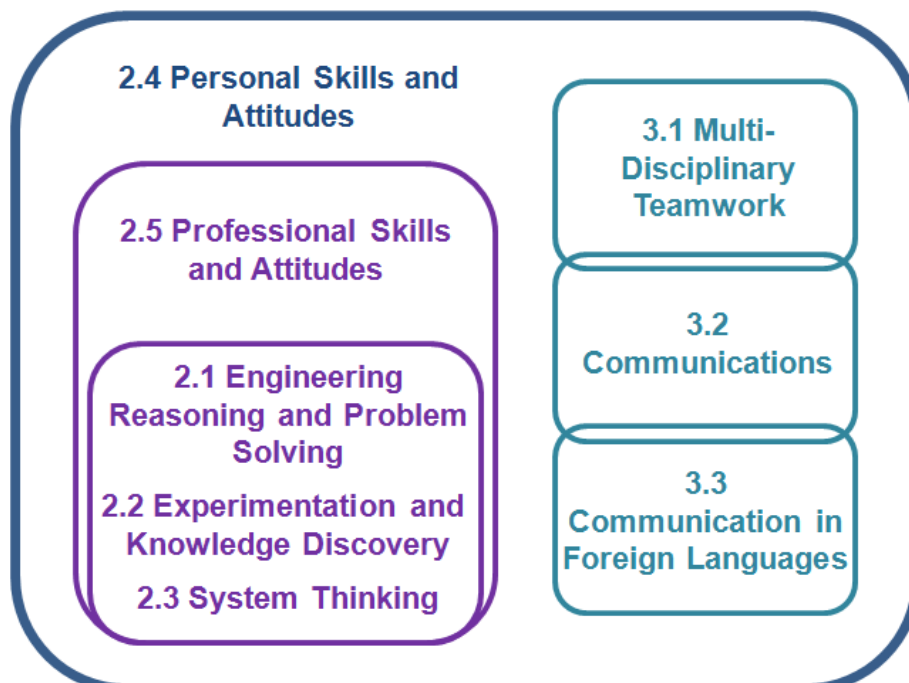


Figure 1 [7]: The CDIO Syllabus: Personal, Professional and Interpersonal Skills

J.E. Christensen has been involved in the work of an effective implementation of CDIO on a practical level at DTU Civil Engineering, which has given rise to an evaluation method [8]

making use of a combined paper and electronic questionnaire. Another way of improving the quality and ideas in the CDIO development is through International Co-operation, which involves participation in CDIO congresses. As an outcome of *the 5th International CDIO Conference, Singapore Polytechnic, Singapore, June 7 - 10, 2009* [9] Jørgen Erik Christensen has established co-operation with Programme Director Markku Karhu from Metropolia to develop a course in International Communication (taught in English), with the focus on communication, teambuilding, networking, positive behaviour and other interpersonal skills [10].

Since 1992, one of the strategic objectives of Metropolia has been to be an international educator of engineers offering the entire degree programme in Information Technology in English. Meanwhile Metropolia has started six new programmes in engineering with English as the instruction language. The objectives of the International ICT (Information and Communication Technology) week for the first year are the following: IT students are encouraged (1) to enhance their communication skills among local (Finnish speaking) and international (English speaking) students as well as (2) to embrace engineering reasoning and teambuilding. A major challenge is posed by the fact that there is hardly any communication between students of the various nationalities. The International ICT Week format is seen to be one way to break the barriers between different nationalities. This activity was commenced in February 2009.

The co-operation was started through the invitation of Prof. Christensen to give a course in International Communication at Metropolia during the International ICT Week, 15-19 February 2010. This was followed up in the Metropolia Summer School, 23-27 August 2010 and the International ICT Week, 21-25 February 2011 held both at Metropolia. During these courses valuable information was collected and used for further development of the course. The course is based on the students making their own experiences while doing different communication exercises.

In order to improve the course student evaluations have been implemented. The evaluations have given valuable information for improvements. In general the results show a very high satisfaction and the students' preference for the active learning approach. The students are highly committed and the course arouses added interest in studying team-building and interpersonal skills.

The principles developed have been used in a CDIO International design-build course in an Erasmus intensive programme (IP) entitled "Developing Open Source System Expertise in Europe (DOSSEE)" [11].

THE PURPOSE WITH THE PAPER

The purpose of this paper is to emphasize the importance of including international communication courses in the CDIO concept while reforming the curriculum in B.Sc. education. Valuable information has been collected from the course evaluations conducted through paper questionnaires, and prompted by these; suggestions will be made for changes to improve the course. The design of the course will be discussed and the actual success factor described based on the paper questionnaires.

Since it has been the objective of Metropolia to enhance the communication skills between local (Finnish speaking) and international (English speaking) students, one focus of this paper has been to analyse how the International Communication Course can support this requirement and develop it further.

DESCRIPTION OF INTERNATIONAL COMMUNICATION COURSES

Metropolia is a technical university and the section that is hosting the course is designated for IT students. Many have major difficulties with communication, as will be described later in the section "Example of an exercise from ICC – Deflection". The students come from numerous countries worldwide, including Vietnam, Korea, Bangladesh, Nepal, Kurdistan, Russia, Nigeria, Kenya, Zimbabwe, Ghana, Morocco, Ethiopia, Costa Rica, different European countries, and of course many come from Finland. The first hours of the course are spent on ice-breaking exercises. This is to give the students a possibility to get to know each other, whereby seated at a proper distance from their partner they will start working having greeted one another in a manner peculiar to each country. General modes of communication are taught along with many exercises:

- Confluence – the mental process whereby you try to conform to the behavioural pattern of your environment to avoid conflict – an important issue when you are an engineer working in a foreign country. Working on this subject means making the student aware of what he/she really feels and when he/she is adapting in perhaps an unhealthy manner.
- Perception – the brain can perceive 11.000.000 impressions per second most of them through sight, but all these impressions are filtered by the brain so only a few of them are conscious. The point is to make the students aware of the fact that two persons can share the same incident, and still have different experiences.
- Figure/background – is a kind of perception but deals among other things with the fact that what one individual sees as important in a situation, another may not find very relevant or simply see in a totally different way – this has a background in cultural differences.
- Projection – an attitude, feeling that is part of your own personality but not experienced as such; instead, it is attributed to another person and then experienced as directed towards yourself by them rather than the other way round. This is especially important to be aware of when working in a foreign country, as many engineers do.
- Manner of speaking: "I, you, one, we." Different languages have different ways of expression.
- Deflection – Turn focus away from the conversation, a way to avoid direct contact with another person. An exercise with deflection is described later.
- Retroflection – when we are not saying what we really think and feel but restrain our reactions, in everyday speech called self-control, self-command. Good to know when and why you do it, especially when working in a culture that is different from your own.
- Introjections – important for the learning of norms, e.g. you should not cross the street on a red traffic signal. But when working in another country there may be some customs that one does not want to embrace, e.g. a Muslim working in Denmark, where alcohol is a common part of a Friday afternoon get-together before the weekend.
- Networking – the importance of networking and trying to be more open to other people. How you develop your network and expand it further. Description of different kinds of electronic networks and how to behave and keep in contact in the long run.

INTERNATIONAL COMMUNICATION COURSES – ICC

The advantage of conducting the International Communication Courses (ICC) in a concentrated form is that it is possible to focus on using sufficient time on the communication part the way it is done in Finland.

When the International Communication Course has been given in Finland and Spain [11], it has been found that the students would rather do a large number of exercises, while the theoretical explanation of the topic should have limited scope to allow more time for exercises. In this way the students will gain progressive access to the subject and can be expected to have maximum concentration while the teachers only speak for about seven minutes at a time.

In our experience the students seem very positive and even delighted to attend the communication course, although some Finnish male IT students may have a negative approach to the way the course is run with regard to the exercises they are expected to actively engage in. They tend to have an attitude that the course is to no avail and that they will not learn anything from it; some also think they already know it all and therefore are reluctant to engage actively in the tasks. They appear to have learned something using their brains, but not their bodies, e.g. by taking part in interactive exercises, which is not integrated knowledge. It demands a great effort by some of the Finnish male IT students to get motivated and understand the importance of a communication course like this. We also experienced that some of these students found the exercises childish. In February 2011 we noted that the Finnish male students had a tendency to bunch together wanting to be in the same group. We grew very careful to divide the Finnish students in such a fashion that during the exercises a non-Finnish student was paired with a Finnish student – it appeared to be very important in order to achieve a good result. This issue will be a matter of great attention at upcoming communication courses.



Figure 2, Helsinki Metropolia University of Applied Sciences, Finland

The Nordic countries are located far up in the north from latitude 54:35N to 71:12N and the difference in the amount of daylight between summer and winter is very significant. This has a great influence on people's moods and communication capability/inclination. This is very obvious when for example Spanish, Portuguese and Italian students stay at DTU in Denmark as they have great problems coping with the lacking daylight/sun in the wintertime. In Narvik, in northern Norway, where J.E. Christensen worked for some years, it was evident that people who were not born there had great problems in dealing with the dark winter. In Narvik the sun cannot be seen from 7 November to 7 February as the mountaintops cut off part of the light apart from the sun being very low in the horizon. Helsinki, the capital of Finland, located at 60:10N has much more daylight in August than in February. This, concurrent with

app. 1 m of snow and -17 C°, had an influence on the course, the mood and the energy to get involved with foreign students – and thus the evaluation questionnaire of February 2011. The Finnish students, when asked about this matter, described their personalities as gloomy and introvert allegedly due to the harsh history and background of their ancestors. Finland fought a gruesome war with the Soviet Union and there has also been a history of landowners exploiting tenant farmers.

It deserves notice that in August 2010 there were only three Finnish students out of 19 present, whereas in February 2011 the attendance of the Finns was app. 50% out of 15. Comparing these two courses, it is also important to be aware of the fact that the number of students is relatively small for a statistical analysis, and consequently, the responses of individual students will have a great weight on the result.

QUESTIONNAIRE – INTERNATIONAL COMMUNICATION COURSE

The paper questionnaire was drawn up as a two-page inquiry form with nine questions on the front page and possibilities for individual comments on the reverse side of the page. The answers were ranked from very much / very important (positive) (1) to very little / not important (negative) (5) to simplify the students' answers and to make it possible to quantify them. As a consequence of former questionnaires with too many questions, resulting in missing or unserious responses, it was considered important to simplify the inquiry form. In addition to the inquiry form, it is our intention that students, who have attended the course 6-12 months earlier, will be selected for personal interviews in order to gain more detailed information about the CDIO evaluation.

International Communication course – Questionnaire

23-27th of August, 2010

Please answer the following questions by using your own words.

Rank the following questions on a scale from 1 to 5, where 1 is the "best / very much / very important" and 5 is the "poorest / very little / not important".

	1	2	3	4	5	
1. How much do you think you have learned in this course?						Very much
2. Do you think it is important to take a course like this in international communication?						
3. Will you be able to use what you have learned during this course?						
4. Does this course contribute to you being more friendly towards people from other countries?						
5. Would you like to have a follow up course, where you can improve and further develop your communications skills?						
6. Do you feel that your contact with your fellow students has improved?						
7. Do you think this course will help you to network better?						
8. Would you like to have more Finnish students to participate in the course?						
9. Will you recommend this course to your fellow students?						

- To what extent did this course make you conscious of the challenges of communication?

- Give an example of something valuable you have learned

- Did the exercises make you commit yourself?

- How is your benefit of the exercises?

- How do you think this course could be improved?

Figure 3. The two-page questionnaire in English, as it was distributed to the students. Front page on the left and reverse side on the right.

The two-page questionnaire is shown in figure 3. The front page of the questionnaire contains the questions specially designed for this course. In the next paragraph there is an interpretation of some of the questions.

The reverse side of the questionnaire contains, first of all, the possibility for the students to make personal comments – see figure 3 on the right. The following is the text of the reverse side of the two-page questionnaire:

Please answer the following questions by using your own words.

- To what extent did this course make you conscious of the challenges of communication?
- Give an example of something valuable you have learned.
- Did the exercises make you commit yourself?
- How did you benefit from the exercises?
- How do you think this course could be improved?

The simplified form of the questionnaire makes it easy and fast for the students to answer the evaluation questions.

ANALYSIS OF THE QUESTIONNAIRE

In the following is an interpretation of some of the questions of the questionnaires of August 2010 and February 2011. There were nine questions in all, of which six will be commented on in this section. The first four questions are dealing with the quality of the course and the last two with the communication between the students. The evaluation is based on 19 answers in August 2010 and 15 in February 2011.

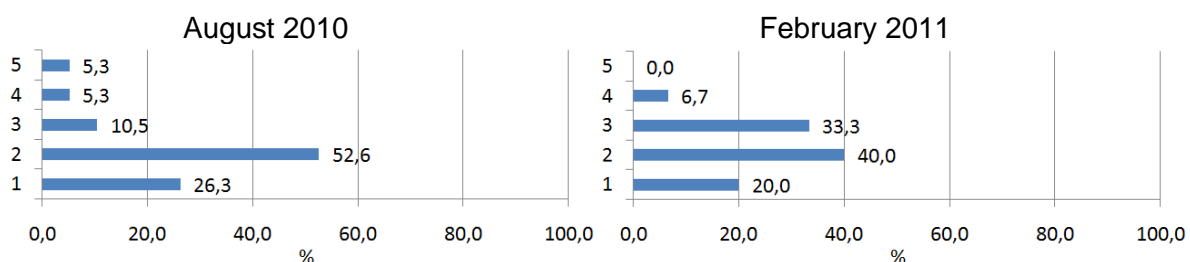


Figure 4. Results from question 1 – “How much do you think you have learned in this course?” The grades are ranked from very much (positive) (1) to very little (negative) (5)

1. “How much do you think you have learned in this course?” – See results in figure 4 – 78.9% respondents in 2010 and 60% in 2011 gave the grade 1 or 2, while 10.5% and, respectively, 33.3% gave the average grade 3. Only 10.6% and, respectively, 6.7%, gave the low grade 4 or 5. The results gained from this question indicate that the students feel they have greatly benefitted from the courses, since 91.4% on average rated them with grades ranging from medium to the highest.

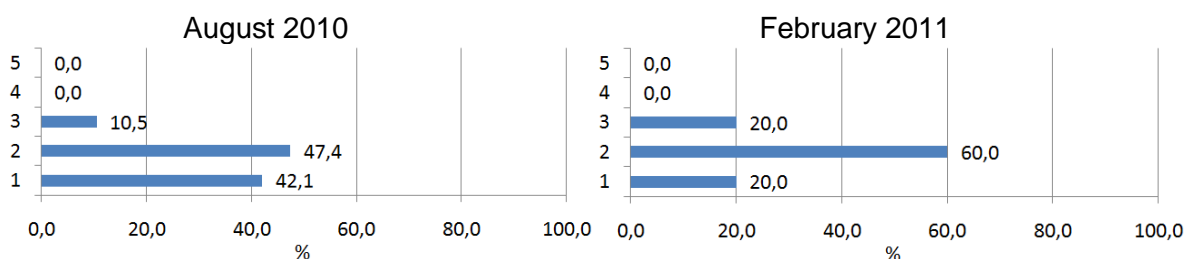


Figure 5. Results from question 3 – “Will you be able to use what you have learned during this course?” The grades are ranked from very much (positive) (1) to very little (negative) (5)

3. *“Will you be able to use what you have learned during this course?”* – See results in figure 5 – 89.5% in 2010 and 80%% in 2011 gave the grade 1 or 2, while 10.5% and respectively 20% gave the average grade 3 and nobody gave the low grade 4 or 5. The results gained from this question show that the students feel they will be able to use what they have learned since 100% gave a grade ranging from medium to the highest.

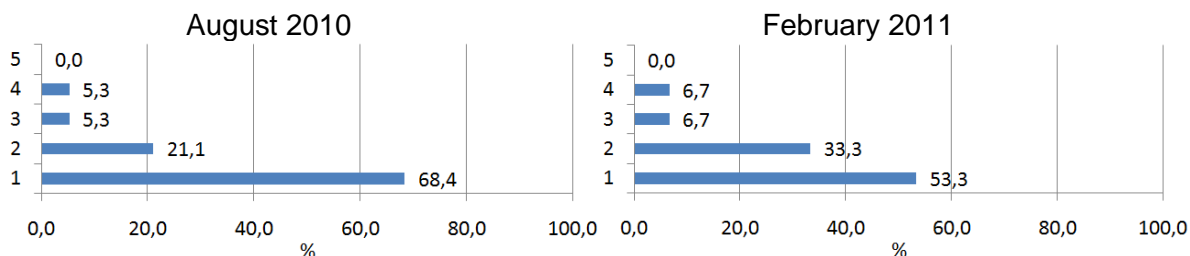


Figure 6. Results from question 5 – *“Would you like to have a follow-up course where you can improve and further develop your communications skills?”* The grades are ranked from very much (positive) (1) to very little (negative) (5)

5. *“Would you like to have a follow up course, where you can improve and further develop your communications skills?”* – See results in figure 6 – 89.5% respondents in 2010 and 86.6%% in 2011 gave the grade 1 or 2, 10.6% and, respectively, 13.4% the average grade 3 or 4. Nobody gave the low grade 5. The results yielded by this question show that the students feel they would like to have a follow-up course since 94% on average of August 2010 and February 2011 respondents gave a grade ranging from medium to the highest.

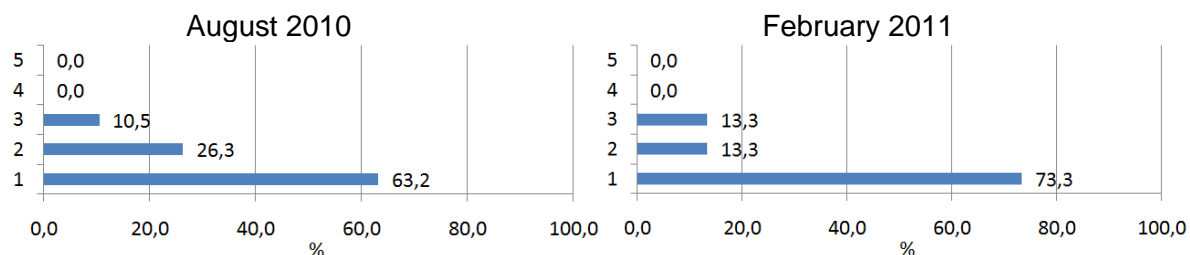


Figure 7. Results from question 9 – *“Will you recommend this course to your fellow students?”* The grades are ranked from very much (positive) (1) to very little (negative) (5).

9. *“Will you recommend this course to your fellow students?”* – See results in figure 7 – 89.5% respondents in 2010 and 86.6% in 2011 gave the grade 1 or 2, while 10.5% and, respectively, 13.3% gave the average grade 3 and nobody gave the low score 4 or 5. The results gained from this question show that the students feel they would like very much to recommend this course to their fellow students since 100% gave a grade ranging from medium to the highest.

Altogether, these four questions dealing with the quality of the course show a very high contentment with the course and the interactive education with personal involvement and exercises. The two highest grades of the answers to these four questions range from 69.5% to 88% (on a yearly basis). The positive answers indicate that the students are very satisfied with the course and that they recognise the need for education on international communication.

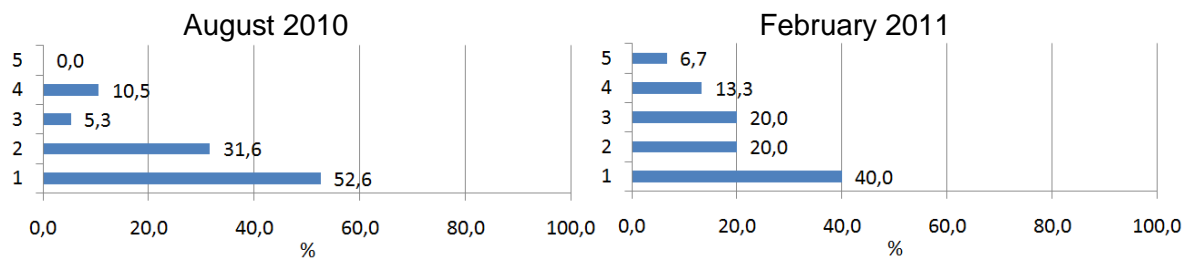


Figure 8. Results from question 4 – “Does this course contribute to you being friendlier towards people from other countries?” The grades are ranked from very much (positive) (1) to very little (negative) (5)

4. “Does this course contribute to you being friendlier towards people from other countries?” – See results in figure 8 – 84.2% respondents in 2010 and 60% in 2011 gave the grade 1 or 2, 5.3% and, respectively, 20% gave the average grade 3. 10.5% and, respectively, 20% gave the low grade 4 or 5. The results gained from this question indicate that the students get friendlier towards people from other countries.

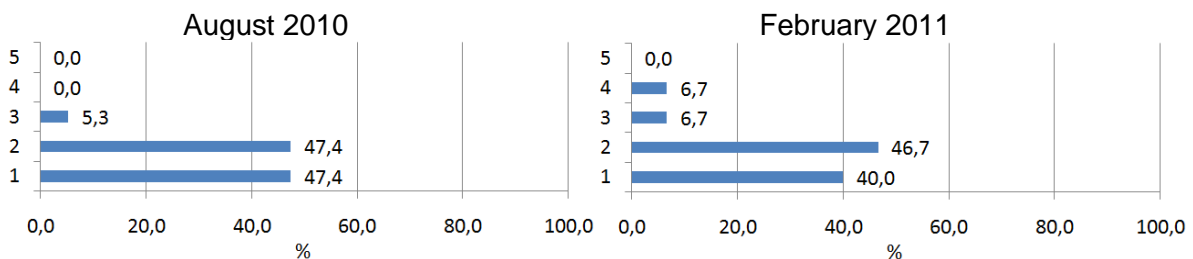


Figure 9. Results from question 6 – “Do you feel that your contact with your fellow students has improved?” Grades are ranked from very much (positive) (1) to very little (negative) (5)

6. “Do you feel that your contact with your fellow students has improved?” – See results in figure 9 – 94.8% respondents in 2010 and 86.7% in 2011 gave the grade 1 or 2. 5.3% and, respectively, 13.4% gave the score 3 or 4. Nobody gave the low score 5. The results gained from this question show that the students strongly feel that their contact with their fellow students has improved since 96.8% respondents on average of August 2010 and February 2011 gave a grade ranging from medium to the highest.

One of the goals of Metropolia is to enhance the communication skills between local (Finnish speaking) and international (English speaking) students. The two questions dealing with this issue show a very high contentment with the course and the possibilities given to students to communicate with each other. The two highest grades of the answers to these two questions rank on average from 72% to 91% (on a yearly basis). Thus it can be concluded that the idea behind the course seems to support Metropolia’s aim.

Questionnaire – individual personal comments

The reverse side of the questionnaire contains the possibility for the students to make personal comments. There are five questions for the students. The following is a selection of some answers from the students (shown as written in the questionnaire).

To what extent did this course make you conscious of the challenges of communication?

August 2010:

- "Very much, we learned different ways, styles, and developed our communication skills very much during this course".
- "It was great to have people all around the world and try to overcome the challenge of misunderstanding someone because of his/her lack of language skills or cultural differences".
- "It made me conscious of some communication problems I could face in the future and day to day life".
- "Now, I can notice some small but important factors for communication that I didn't know before. Also I learned how to behave and talk well when I communicate with other people".
- "The different ways of communicating and be aware of the small details such as body language".
- "Basically this course helped me personally to be more conscious with different situations –International Communication Course helped to develop more awareness in public speaking etc."

February 2011

- "Communicating and performing have always been a struggle to IT-students"
- "This course helped me to improve the communication power, how to deal with other people from other countries and in what ways"
- "I realised the meaning of body language and how much it can affect people"
- "I had the general knowledge before the course but hopefully now I can actually use it, now that I have seen what all of this actually meant".
- "I realised that I really do need these skills, because of the examples of trying to get a job".
- "The course really awakened my practical aspect of communication. I am now confident of starting a talk and continuing it".

Give an example of something valuable you have learned.

August 2010

- "How to communicate with people politely, how to react listening to my feeling inside, accept that other cultures are different."
- "Noticing my own reactions and feelings in different situations".
- "You have to accept people as they are. Everyone has a different background, so everyone reacts different to every situation".
- "I have learned how to interact and adapt to people from other countries".
- "Being able to communicate without thinking of barriers has helped me to learn more about other cultural behavior and expectations. It has also helped me to know that people are very nice if you use the right approach to interact with them".

February 2011

- "Professional way of conversation with new people".
- "How people behave in conversations or in relation to certain circumstances. For example introjections, projection, deflection and many other abstract behaviors".
- "Body language's importance in communication"
- "Controlling my body language better and my "small talk" as well".
- "Importance of body language and what kind of reactions you should look for in the others"

Did the exercises make you commit yourself?

August 2010

- "Yes. I felt the exercises were really fun, especially the ones where somebody was complementing you. It gave a nice feeling".
- "Exercise actually helped a lot and showed us a way practically".
- "Yes! By making me behave well, and respond or react to different situations without having to offend others".
- "Yes all exercises were interesting and each of them has a conclusion that I understand".
- "Yes, I had to wake up early and be in class on time".

February 2011

- "Yes, as you know "practise makes man perfect"".
- "If the partner(s) was taking the exercise seriously also".
- "Yes, it was fun".
- "Yes a lot. I realised many things that I wasn't aware before".
- "I had to commit myself thanks to crowd activeness".

How is your benefit of the exercises?

August 2010

- "I think I'll notice the reactions of myself and others better. That's a benefit".
- "I can realize some of my abilities and know how to use them".
- "I'm running a lot of courses so it's important to remember that people are different and it is important to make everyone feel special and a part of the group".
- "Exercises will be memorized easier than theory. Also, nice to practice certain social situations".
- "To implement the learned skills in our daily life because communication skills are required in each and every step of our life and also in working life in companies".

February 2011

- "The exercise that I have done during the lesson helped me how to change theoretical things into practice".
- "I learned a lot about myself. It sure will help me in the future".
- "I learned to cope with other people better and understand them better".
- "I think those exercises improved me mentally a lot".
- "Makes me practice to talk, behave with people and teach me to be a good listener as well".

How do you think this course could be improved?

August 2010

- "It would have been better to do the exercises in open and bigger area".
- "The body language aspect could be explored more deeply. Also not so many optical illusions. Jørgen could sometimes stick more to the point when talking long. It's okay to go off-topic, but sometimes it was too much".
- "Just by adding more interesting games or examples, or having an extra teacher who could".
- "I think one week is not enough, two weeks should be very nice".
- "I think this course should have more practical exercises".

February 2011

- "I don't think it could be better. Needs more time to do all these exercises".
- "Different themes should be introduced better; tell what they are about. Then rehearse/practise them. At some points I lost focus of what's happening".

- “More talking between students”.
- “Yes! Slow down in the first day. I was very scared and thought that I didn’t want to come here again. Fortunately I did, and the next day was easier”.
- “I think it’s pretty good the way it is. We discussed if it would be better to divide the lessons into two weeks but I think one week intensive course supports the course better”.
- “For the future, this course should be a compulsory subject and include so many students from different nationality”.

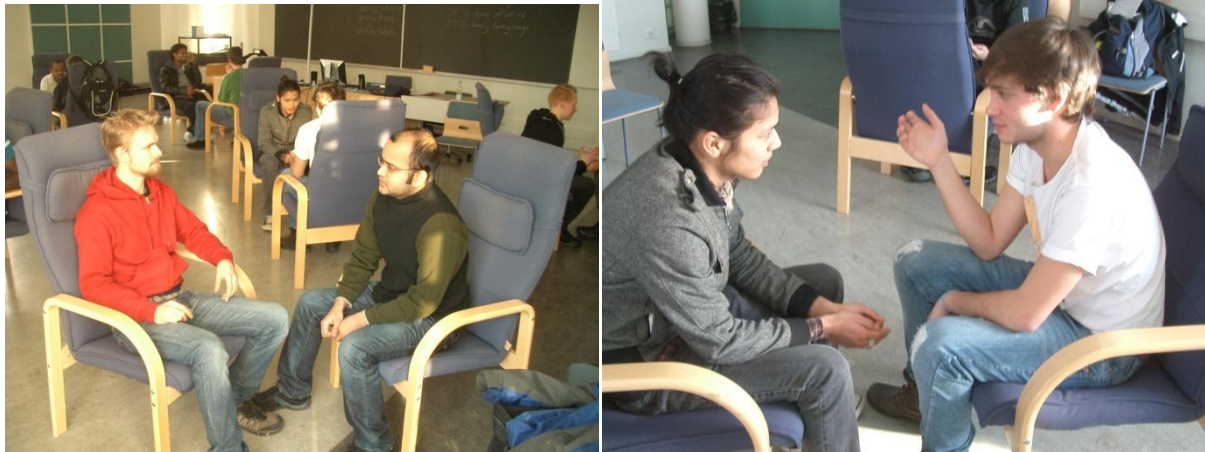


Figure 10. Students doing one of the exercises.

ICC – EXERCISE EXAMPLES

Example of an exercise from ICC – Deflection

Since the students referred to in this paper are IT students, comments shall be made specifically on an exercise that was found to be interesting for these students. The exercise is called “Deflection”. Person no. 1 (P1) tells an interesting story and person no. 2 (P2) is listening. In the beginning P2 is listening very intensely, making sure to show this. After three-four minutes P2 starts to deflect. In the beginning, P2 only deflects a little but gradually more and more. To deflect means that you are no more focused on the story but you are looking everywhere else than at P1. You may be checking your text messages or your watch – you may be paying attention to a conversation next to you. You are present in the actual situation but your mind is elsewhere. When doing the exercise with deflection, we have experienced that Asians and especially the Nepalese have a tendency to be too polite and therefore cannot do the exercise accurately – they listen and ask too much. We have seen analogous behaviour with students from Slovakia and Latvia. These communities have difficulties being impolite, whereas people from the Nordic countries are far better in this respect.

Another issue about the deflection exercise is when P1 is telling a very exciting story, thus making it is difficult for P2 to deflect. For example, a student told a very moving story about his fight with cancer, about how to survive and make it through the whole process of not knowing how it would end. It was extremely difficult for P2 to partly deflect because the story was interesting, but also because it would have appeared cruel to deflect on such an emotional story.

In the following are given two examples of deflection from real life. A person was at a job interview and three persons from the company were present, two of whom were listening

very carefully, whereas the third person was very unfocused and deflecting. This was most uncomfortable and appeared very rejecting, it being a job interview. Another example: On mentioning to some people that we work with IT students, one of our friends told us this: *“After finishing a project, a partner contacted me wanting a two-hour work-related meeting in order to discuss some issues. Perceiving that most subjects were fine, I thought this meeting would not be necessary and as I had a very busy schedule, I stated that we had to make it a very brief meeting. Shortly after the start of the meeting his phone rang and he talked for a long while. Later his phone rang again and once more he had a lengthy conversation. When we had talked for about 45 minutes he suddenly turned to his computer. He turned his back to me when he started working on it. I got very annoyed because I was rather stressed. I asked him if our meeting was over and he said “yes”, still working at his computer with his back turned towards me. This is how the meeting ended”.*

Several of our Finnish male IT students have pointed out that it is rather normal for them that, when together, each of them is occupied with their own thing while they “communicate” with each other. In some ways they have developed different norms of communicational behaviour, which they apply when having company. Since it is normal to them, they do not at all understand that they appear rejecting and non-present. The previous example was just about an IT person and his behaviour in a job related situation.

Final exercise from ICC – American Jazz Musician

On the last day of the course in August 2010 we gave the students an exercise about an American jazz musician in Denmark. In this exercise the students were to apply the theoretical mechanisms they had learned during the course and it turned out that the students had a great understanding of and insight into communication mechanisms they had newly been taught. However, when the students got the same exercise in February 2011, they were not able to solve the task at all as well as the group of August 2010. This exercise could be seen as a test not only for the students but indeed for us as teachers also, and thus we have to state that we weren't quite as successful in February 2011. This could have been due to our spending relatively more time on talking in general and not spending quite as much time on the specific exercises with matching theory. Experience from August 2010 and February 2011 together with three 2-hour courses in Alcalá give a clear indication that we have to confine ourselves to relatively short interpretations of theory or cases, which should only last about seven minutes. We have to focus much more on doing many exercises the students are actively engaged in – preferably several times so that the students really understand the fundamental theory and are able to put theory into practice in actual situations.

SEPARATE COURSES VS INTEGRATED COURSES IN ICC

There may be arguments arising against having the communication course as a separate course as well as integrated in a technical course. It is a question of the existing possibilities at the educational establishment concerned. At DTU Civil Engineering it will be very difficult to establish a separate course in communication (explained in more detail later); but at Metropolia they lay much weight on management and finances in their education, and they already established an ICT week in February. In addition, Metropolia has a summer school providing much better possibilities to hire lecturers from other universities and to experiment with and further develop the education programmes. Owing to summer school activities, courses can be adapted from year to year according to possibilities and wishes. Summer schools are therefore a valuable addition to an educational establishment.

Conducting the International Communication Courses (ICC) in a concentrated form and as separate courses has the advantage that it is possible to focus on using sufficient time on the

communication part, the way it is done in Finland. The duration of the course is one week and it is all about communication – the students have to work and commit themselves 100%, which is hard for many of them, and it is evident that a large number of the young people get very tired after the daily four hours of intensive work since they are obtaining new ways to experience the world and have to use their minds in completely different manners. It is our experience that the students are quite capable of letting go of the technology and turn their focus to communication, but if the communication course is related to a subject area that they are very interested in (like IT), they somehow do not let their minds off the technology nor turn their full attention toward communication [11]. Many of them have some difficulty with communication as such, so even if they really liked to work with communication, it is so much easier to resort to a subject area that they love to work on and know they are good at.

The semester at DTU consists of a 13-week period prescribed for courses of a total of 25 ECTS points (European Credit Transfer and Accumulation System), a two-week exam period and a three-week period prescribed for a one 5 ECTS points course, which is usually a more practical course with parts of the theory from the 13-week period put into practice. At DTU one 5 ECTS points course is equivalent of 13 weeks' input of an estimated workload of 9 hours/week with an estimated total workload for the full course at 117 hours. Normally the students have 4 hours of teaching and 5 hours of preparation for a course per week, translating into 52 hours teaching and 65 hours homework. The communication part will easily occupy 20 hours out of the 52 hours teaching time, which makes it harder to integrate the communication training into a normal course in the 13-week period. It will be easier to include the communication part in the 3-week 5 ECTS points course, where the students usually have no homework. However, they are expected to work for 8 hours a day during the course. Thus it will be much more suitable to include communication in the course, since it will only take up part of the time as the students are expected to be present for all 117 hours.

However, it could be a possibility to include a 4-hour icebreaking part in the first CDIO course during the first semester at the Department of Civil Engineering, where CDIO is introduced as a Design Build course. A student who studied the material from Metropolia stated that it could be helpful to have a similar course at DTU Civil engineering: *“Especially in the process of getting to know your new fellow students – there is a lack of courses at DTU that can support these areas (like the course at Metropolia)”*. The icebreaking part could be included in the first or second teaching block. Nevertheless, it will not be possible to include the whole communication course in the 5 ECTS points Design Build course since it will take up too much time from the whole course.

If we make the course a compulsory course, we will get students who are not really interested and only take it because they are obliged to do so, and this will weaken the outcome for the other students, since many of the exercises are done as pair work.

CONCLUSION

In many technical universities there is a lack of focus on teaching interpersonal skills such as ethics, communication, co-operation, commitment, leadership and teamwork. It is important that space is created in the curriculum for courses in the softer values. For some of the courses it should be a deliberate requirement, stated as a learning objective that the students will be evaluated on their interpersonal skills mentioned before. Thus they would feel urged to focus on their personal development knowing it is a part of the evaluation procedure.

Teaching softer skills can take place in strictly non-engineering courses on communication and interpersonal skills or in courses with a technical substance [11]. This paper presents the results from a strictly non-engineering course in communication. The duration of the course was a full week and it consisted of various small exercises with personal involvement,

whereby the participants could develop their interpersonal communications skills in the contact process. Experience shows that the students appear to be very positive and delighted to attend the communication course although a couple of Finnish male IT students had a negative approach to the way the course was conducted. Based on this it is our challenge to persuade such students of the importance of improving their communication skills. One of the reasons for this is that many of the exercises are done in pairs, and if a participant is negative, it can wholly or partly destroy the learning outcome for the other party. One way to solve this and achieve a good result was to place Finnish students together with non-Finnish students during these exercises.

In the questionnaire four of the questions dealt with the quality of the course. The results showed a very high satisfaction with the course and the interactive education with personal involvement and exercises. The grades one and two (1 best/very much, 5 worst/very little) of the responses to these four questions are ranging on average from 69.5% to 88% (on a yearly basis). The positive answers indicate that the students are very satisfied with the course and that they recognise the need for education on international communication.

The objective for Metropolia is to enhance communication skills between local (Finnish speaking) and international (English speaking) students. Two of the questions in the questionnaire dealt with this issue, and showed a very high satisfaction with the course and the given possibilities to communicate with fellow students. The grades one and two (1 best/very much) of the responses to these two questions range from 72% to 91% (on a yearly basis). Thus it can be concluded that the idea behind the course seems to support Metropolia's aim.

The course can be improved by reducing the teaching sessions to seven concentrated minutes between the exercises. This will give more time for exercises and revision. Currently 100% attendance of courses is required at Metropolia; however, in future courses participants will also be required to commit themselves through personal involvement rather than just being physically present.

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Biographical Information

Jørgen Erik Christensen received his M.Sc. and Ph.D. degrees from the Technical University of Denmark in Copenhagen, Denmark in 1981 and 1987, respectively. From 1988 to 1991, he worked at the Danish Building Research Institute, Denmark, and was in 1990 appointed to senior researcher. From 1992, he worked as Professor of Integrated Building Technology at Narvik University College, Norway. From 1994 – 1995, he worked as Managing director at Narvik – Peace Centre in the North. From 1997 to 2001 he studied gestalt therapy specialising in communication at the Norwegian Institute for Gestalt. From 2003 to 2007 he was an Associate Professor at the Faculty of Engineering, Oslo University College and completed a Fundamental Course in Education for College Lecturers during 2004-2005. From 2007 until present he has worked as an Associate Professor with the Department of Civil Engineering, Technical University of Denmark. In 2009 he studied "Pedagogical and Didactic Theory about University Education and Teaching" at the Danish Pedagogical University, Denmark. He has been involved in national and international research in the field of energy and environment and is a co-developer of an internationally used thermal analysis program known as tsbi3. Dr Christensen is a member of the CDIO implementation board of the Department of Civil Engineering at the Technical University of Denmark.

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